

## CLAIM AMENDMENTS

**1. (Currently Amended)** A method comprising:

using, by one or more computing devices, a system definition model in a development phase of a system to design the system, the system definition model including one or more requirements of the system ~~that must be~~ to be satisfied by an environment of which the system is to be deployed in order for the system to run in the environment, wherein the system ~~[[is]]~~includes an application;

validating the environment for the system, by the one or more computing devices, by comparing the one or more requirements of the system with the environment of which the system is to be deployed to determine whether the one or more requirements of the system are satisfied by the environment during the development phase;

validating the system for the environment, by the one or more computing devices, by comparing the one or more requirements of the environment with the system to determine whether the one or more requirements of the environment are satisfied by the system during the development phase;

subsequently using, by the one or more computing devices, the system definition model in a deployment phase of the system to deploy the system on at least one of the one or more computing devices;

after deployment of the system, calling, by the one or more computing devices, one or more functions defined within the system definition model during a management

phase of the system to manage the system deployed on the at least one of the one or more computing devices; and

integrating the development phase, the deployment phase, and the management phase in a lifecycle of the system based on the system definition model.

~~validating the environment, by the one or more computing devices, by comparing the one or more requirements of the system with the environment of which the system is to be deployed to determine whether the one or more requirements of the system are satisfied by the environment during at least the design of the system.~~

**2.-3. (Canceled)**

**4. (Original)** A method as recited in claim 1, further comprising:

using knowledge obtained during management of the system to design a subsequent version of the system.

**5. (Original)** A method as recited in claim 1, wherein the system definition model includes knowledge describing how to deploy the system on the one or more computing devices.

**6. (Original)** A method as recited in claim 1, wherein the system definition model includes knowledge describing how to deploy the system on multiple different

computing devices, and wherein the knowledge includes different knowledge describing how to deploy the system on each of the multiple different computing devices.

**7.-8. (Canceled)**

**9. (Currently Amended)** A method as recited in claim 1, wherein the validating the environment compares the one or more requirements of the system with the environment during both ~~[[a]]the~~ design of the system prior to the using the system definition model to deploy the system and during ~~[[a]]the~~ management phase of the system.

**10. (Original)** A method as recited in claim 1, wherein the system definition model includes knowledge describing how to manage the system after deployment of the system.

**11. (Original)** A method as recited in claim 1, further comprising:  
during management of the system, using a flow to automatically propagate a configuration change to the system.

**12. (Canceled)**

**13. (Previously Presented)** A method as recited in claim 48, wherein the system definition model for the environment is derived through examination of the configuration of the one or more computing devices.

**14. (Canceled)**

**15. (Original)** A method as recited in claim 1, wherein a plurality of environments are deployed on the one or more computing devices, the method further comprising:

using a plurality of different system definition models to design each of the plurality of environments, wherein each of the plurality of environments is associated with one of the plurality of different system definition models;

using, for each environment, the associated one of the plurality of different system definition models to deploy the environment; and

after deployment, using, for each environment, the associated one of the plurality of different system definition models to manage the environment.

**16. (Original)** A method as recited in claim 15, wherein each of the plurality of environments is layered, and wherein each of the plurality of environments serves as environment to one other of the plurality of environments or to the system.

17. (Currently Amended) ~~One or more computer readable storage media~~ A computing device having stored ~~thereon~~ a plurality of instructions that when executed by a processor, cause the processor to perform actions comprising:

~~use~~using a system definition model in a development phase of a system to design the system, wherein the system ~~[[is]]~~includes an application, the system definition model includes a representation of an environment in which the application is to be deployed, and the using includes binding the application to the representation in the system definition model, the representation including definitions for hosts of the environment of their application components and constraints on the configuration of their applications;

~~determine~~determining that the environment in which the application is to be deployed satisfies the constraints on the configuration of their applications prior to deploying the system;

validating the environment for the system, by the processor, by comparing the one or more requirements of the system with the environment of which the system is to be deployed to determine whether the one or more requirements of the system are satisfied by the environment during the development phase;

validating the system for the environment, by the processor, by comparing the one or more requirements of the environment with the system to determine whether the one or more requirements of the environment are satisfied by the system during the development phase;

subsequently ~~using~~ the system definition model in a deployment phase of the system to deploy the system on one or more computing devices; [[and]]

during the deployment phase of the system, generating a record of resources involved in the deployment phase and relationships between the resources; and

after deployment of the system, invoking one or more functions defined within the system definition model in a management phase of the system to manage the system deployed on the one or more computing devices.

**18.-19. (Canceled)**

**20. (Currently Amended)** ~~One or more computer readable storage media~~ The computing device as recited in claim 17, wherein the system definition model includes knowledge describing how to deploy the system.

**21. (Currently Amended)** ~~One or more computer readable storage media~~ The computing device as recited in claim 17, wherein the system definition model includes knowledge describing how to deploy the system in multiple different environments, and wherein the knowledge includes different knowledge describing how to deploy the system in each of the multiple different environments.

**22. (Currently Amended)** ~~One or more computer readable storage media~~ The computing device as recited in claim 17, wherein the system definition model includes constraints ~~that must to~~ be satisfied by an environment in order for the system to be run in the environment.

**23. (Currently Amended)** ~~One or more computer readable storage media~~ The computing device as recited in claim 22, wherein to use the system definition model to deploy the system is to use the system definition model to check whether the constraints are to be satisfied by the environment during design of the system.

**24. (Currently Amended)** ~~One or more computer readable storage media~~ The computing device as recited in claim 17, wherein the system definition model includes knowledge describing how to manage the system.

**25. (Currently Amended)** An apparatus comprising:  
a processor;  
~~means operable by the processor for using~~ a controller executed on the processor, configured to use a system definition model in a development phase of a system to design the system, ~~wherein the system is an application, wherein the using comprises including,~~ ~~in~~ the system definition model [[,]] includes requirements of the system ~~that must to~~ be

satisfied by an environment in order for the system to be run in the environment, wherein the system includes an application;

a development system executed on the processor to validate the environment by comparing the requirements of the system with the environment to determine whether the requirements of the system are satisfied by the environment during the development phase;

the development system further executed on the processor to validate the system by comparing the requirements of the environment with the system to determine whether the requirements of the environment are satisfied by the system during the development phase;

~~means operable by the processor~~ a deployment module executed on the processor for subsequently using the system definition model in a deployment phase of the system to deploy the system on one or more computing devices;

~~means operable by the processor for,~~ a management module executed on the processor after deployment of the system, calling to call one or more functions defined in the system definition model in a management phase of the system to manage the system deployed on the one or more computing devices; and

the controller further executed on a processor to use the system definition model to integrate the development phase, the deployment phase, and the management phase in a lifecycle of the system.



~~means operable by the processor for validating the environment by comparing the requirements of the system with the environment to determine whether the requirements of the system are satisfied by the environment during at least the design of the system prior to the using the system definition model to deploy the system.~~

**26. (Currently Amended)** An apparatus as recited in claim 25, wherein the ~~means for subsequently using the system definition model in [[a]]the development phase comprises means for including, in the system definition model,~~ includes knowledge describing how to deploy the system.

**27. (Currently Amended)** An apparatus as recited in claim 25, wherein the ~~means for subsequently using the system definition model in [[a]]the development phase comprises means for including, in the system definition model,~~ includes knowledge describing how to deploy the system in multiple different environments, and wherein the knowledge includes different knowledge describing how to deploy the system in each of the multiple different environments.

**28.-29. (Canceled)**

**30. (Currently Amended)** An apparatus as recited in claim 25, wherein the ~~means for using~~ call one or more functions defined in the system definition model in

~~[[a]]the management phase of the system comprises means for including, in the system definition model,~~ includes knowledge describing how to manage the system.

**31. (Currently Amended)** A system comprising:

a processor; and

a plurality of executable instructions which, when executed by the processor, perform operations comprising:

using a system definition model to design an application, the system definition model being applicable across a lifecycle of the application, wherein the lifecycle of the application includes design of the application, deployment of the application, and management of the application, and wherein the system definition model includes a representation of an environment in which the application is to be deployed, and the using includes binding the application to the representation in the system definition model, the system definition model including requirements of the application ~~that must to~~ be satisfied by the environment in order for the application to run in the environment;

a development system executed on the processor to validate the environment by comparing the requirements of the system with the environment to determine whether the requirements of the system are satisfied by the environment during a development phase;

the development system further executed on the processor to validate the system by comparing the requirements of the environment with the system to determine whether the requirements of the environment are satisfied by the system during the development phase;

subsequently using the system definition model to deploy the application on one or more computing devices;

during the deployment phase of the application, generating a record of resources involved in the deployment phase and relationships between the resources; and

after deployment of the application, calling one or more functions defined within the system definition model to manage the application deployed on the one or more computing devices;

wherein the system further includes a schema to dictate how functional operations within the system definition model are to be specified.

**32. (Original)** A system as recited in claim 31, wherein the system definition model includes information describing how to deploy the application.

**33. (Original)** A system as recited in claim 31, wherein the system definition model includes information describing how to deploy the application in multiple different

environments, and wherein the information includes different information describing how to deploy the application in each of the multiple different environments.

**34. (Currently Amended)** A system as recited in claim 31, wherein the system definition model further includes requirements of the environment ~~that must to~~ be satisfied by the ~~application-environment~~ in order for the application to be run in the environment, the plurality of executable instructions to further perform operations comprising using the requirements of the environment during runtime while the application is being managed to validate the changes to the application during runtime.

**35. (Previously Presented)** A system as recited in claim 34, wherein the plurality of executable instructions to further perform operations comprising validating the environment by comparing the requirements of the application with the environment to determine whether the requirements are satisfied by the environment during at least the design of the application.

**36. (Previously Presented)** A system as recited in claim 35, wherein the plurality of executable instructions to further perform operations comprising validating the application by comparing the requirements of the environment with the application to determine whether the requirements of the environment are satisfied by the application during at least the design of the application.

**37. (Original)** A system as recited in claim 31, wherein the system definition model includes information describing how to manage the application.

**38. (Previously Presented)** A system as recited in claim 31, wherein the system further comprises:

another system definition model applicable across a lifecycle of the environment, wherein the lifecycle of the environment includes design of the environment, deployment of the environment, and management of the environment; and

wherein the schema is further to dictate how functional operations within the other system definition model are to be specified.

**39. (Previously Presented)** A system as recited in claim 38, wherein the other system definition model for the environment is derived through examination of the configuration of one or more computing devices.

**40. (Currently Amended)** A system as recited in claim 38, wherein the system definition model includes constraints ~~that must to~~ be satisfied by the environment in order for the application to be run on the environment, and wherein the other system definition model includes constraints ~~that must to~~ be satisfied by the application in order for the application to be run on the environment.

**41. (Original)** A system as recited in claim 38, wherein the system further comprises:

an additional system definition model applicable across a lifecycle of an additional environment, wherein the lifecycle of the additional environment includes design of the additional environment, deployment of the additional environment, and management of the additional environment;

wherein the additional environment is layered below the environment; and

wherein the schema is further to dictate how functional operations within the additional system definition model are to be specified.

**42.-43. (Canceled)**

**44. (Previously Presented)** A method as recited in claim 1, wherein the system definition model includes information describing how to deploy the system in multiple different runtimes, and wherein the information includes different information describing how to deploy the system in each of the multiple different runtimes.

**45.-47. (Canceled)**

**48. (Currently Amended)** A method as recited in claim 1, further comprising, prior to the design, deployment, and management of the system,

using, by the one or more computing devices, another system definition model to design the environment, wherein the system is deployed to the environment on the one or more computing devices;

subsequently using, by the one or more computing devices, the other system definition model to deploy the environment on the one or more computing devices; and

after deployment of the environment, using, by the one or more computing devices, the other system definition model to manage the environment deployed on the one or more computing devices,

wherein the system definition model includes the one or more requirements of the system ~~that must to~~ be satisfied by the environment in order for the system to be run on the one or more computing devices, and wherein the other system definition model includes constraints ~~that must to~~ be satisfied by the system in order for the system to be run on the one or more computing devices.